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THE VALUE OF BODILY MATERIAL: ACQUIRING AND ALLOCATING HUMAN GAMETES

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ABSTRACT

The UK is facing increasing demand for sperm and eggs for use in medical treatment and research. The disparity between supply and demand has led a number of UK bodies to recommend the adoption of a national donation system, at least with regard to gamete donation for treatment. This article argues that a national gamete donation system would have benefits beyond those articulated by bodies such as the Human Fertilisation and Embryology Authority, the British Fertility Society and the Nuffield Council on Bioethics, because a system of this type could facilitate the legal and ethical implementation of donor incentives. Three types of incentive are explored and it is argued that a national donation system could and should be utilised to implement a mirror exchange scheme or, preferably, an indirect mirror exchange scheme.

Keywords: gamete donation, human fertilisation and embryology authority, national donation system.

I. INTRODUCTION

How should the UK address the increasing demand for human gametes—sperm and eggs—for use in medical treatment and research? At present, many patients remain childless while waiting for infertility treatment using donated gametes¹ and researchers claim that shortages, principally of human eggs, are hindering scientific progress and potential new treatments.² A review of fertility clinics by the Human Fertilisation and Embryology Authority (HFEA) reported that half were unable to meet demand for treatment with donor sperm and 90% were unable to meet demand for treatment with donor eggs.³ Despite the development of alternatives to donated gametes,⁴ availability thus continues to fall below demand. Similarly, the increasing⁵ shortage of human eggs has led to researchers not pursuing their preferred

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¹ Waiting times of 3-5 years have been reported for donor eggs for use in infertility treatment: see HFEA, *A Review of the HFEA's Sperm and Egg Donation Policies – 2011* (2011) 3. The British Fertility Society estimates that we need at least 500 sperm donors a year to meet demand in infertility treatment: BFS, *Working Party on Sperm Donation Services in the UK: Report and Recommendation* (2008) 7.

² See House of Commons Science and Technology Committee, *Government Proposals for the Regulation of Hybrid and Chimera Embryos. Fifth Report of Session 2006–07. HC 272–I*, para 60.

³ HFEA, *Sperm, egg and embryo donation (SEED) policy review: findings of the clinic survey* (2004) paras 2.3 and 3.3.

⁴ Eg ICSI (intracytoplasmic sperm injection), which involves the injection of a sperm into an egg, has been in use since 1992: see HFEA (n 1) 4. This technique reduces the need for donor insemination.

⁵ The HFEA's long-term data show that egg donation for both treatment and research decreased significantly between 2001 and 2006: HFEA, *A long term analysis of the HFEA register data 1991-2006* (2008) table 25a.

strategy. At one point, experiments were conducted involving the transfer of human material into animal eggs instead of human eggs.⁶ It is frequently noted that some patients and researchers travel to other countries for access to donor gametes where there are different, often less rigorous, regulatory controls.⁷

In contrast to the national system applying to the donation of blood and organs for treatment, there is no centralised network addressing the need for gametes in treatment and research. The HFEA was established by the Human Fertilisation and Embryology Act 1990 (the 1990 Act) to license fertility treatment and research conducted using human gametes, but was not tasked with responsibility for ensuring the supply of donors. Since the government is currently in the process of restructuring the NHS and regulatory bodies addressing fertility, research and tissue—reforms which are to include the abolition of the HFEA in its current form by 2015⁸—now is a suitable time to reconsider the adequacy of the system for acquiring and allocating human gametes.

The absence of a body empowered to nationally coordinate the system of gamete donation means that approaches to the recruitment of gamete donors for treatment and research, and the allocation of donated gametes for treatment, vary between clinics. NHS Blood and Transplant (NHSBT) has responsibility for managing the national donation system for obtaining blood, tissues and organs for transplantation,⁹ but has no responsibility for gametes. The idea of adopting such a system for gamete donation, at least for treatment, has widespread support. It has not, however, reached the stage whereby implementing legislation has even been proposed by the Government. In 1998, the HFEA expressed its support for the ‘creation of a regional or national donor service’, noting that the advantages of such a system would include facilitating donation, ensuring consistency in data collection, maximising the efficient use of the supply of donors and improved matching of patients from ethnic minority groups because of access to a wider pool of donated material.¹⁰ The HFEA indicated that the biggest practical hurdle would be the start-up costs. In November 2008, a British Fertility Society (BFS) working party on sperm donation services in the UK expressed concern that ‘a substantial majority of clinics are struggling to maintain sperm donation services and in some parts of the country these services have now ceased’.¹¹ It went on to recommend that the UK adopt a nationally co-ordinated approach to the organisation of sperm donation services, primarily to ensure ‘economies of scale’ in the costs and effort required to manage and maintain donors.¹² The Nuffield Council on Bioethics, which issued a report on the donation of bodily material for treatment and research in October 2011, similarly concluded that ‘there should be a coherent managed infrastructure for egg and sperm donation, on the lines of the structures currently in place for organ donation’.¹³ It argued that the state has a ‘stewardship role’ to play with regard to the donation of reproductive material—noting that the state has already accepted a role in regulating fertility treatment, has adopted guidance recommending publicly-funded IVF treatment and has a widely accepted role in protecting the welfare of children.¹⁴ The Nuffield Council also noted that research, and its future potential benefits, is

⁶ See F Walsh, ‘UK’s first hybrid embryos created’ BBC news (1 April 2008) <<http://news.bbc.co.uk/1/hi/health/7323298.stm>>.

⁷ Eg Nuffield Council on Bioethics, *Give and take? Human bodies in medicine and research* (2010) para 3.83.

⁸ Department of Health, *Liberating the NHS: report of the arm’s length bodies review* (July 2010) and Public Bodies Act 2011.

⁹ See <<http://www.nhsbt.nhs.uk>>.

¹⁰ HFEA, *Consultation on the Implementation of Withdrawal of Payments to Donors* (1998) paras 4.1–4.4

¹¹ BPS (n 1) 2.

¹² Ibid.

¹³ Nuffield Council of Bioethics (n 7) para 7.66.

¹⁴ Ibid para 7.13.

of ‘vital public interest’¹⁵ and the system for obtaining donations of organs and tissues from deceased persons for transplantation could be extended to encompass donation of organs and tissues for research.¹⁶

This article will argue that the adoption of a national system of gamete donation for both treatment and research would have an additional advantage: it would facilitate the legal and ethical implementation of donor incentives. Three types of reward/incentive will be examined as potential mechanisms for prompting the donation of gametes from those who might not otherwise donate. While much can be said about the potential of a national donation system to facilitate the legal and ethical provision of financial incentives, it will be argued that such a system would be even better placed to enable the legal and ethical provision of non-financial incentives.

The analysis below will begin by briefly exploring the regulatory context, including the increasing need for human gametes and the limited restrictions imposed by the need to comply with the provisions of various European instruments. It will then explore the issues raised by the provision of financial incentives, before arguing that a national donation system would be well placed to ethically implement a form of exchange system in which donors would contribute to gain access, or alternatively an increased chance of access, to gametes.

II. THE REGULATORY CONTEXT

A number of recent regulatory developments have, as a side effect, facilitated demand and decreased supply of human gametes. Three have been particularly relevant to the treatment context. First, single woman and lesbian couples seeking to use donor sperm to become parents¹⁷ have been assisted by the amendment and supplementation of the 1990 Act by the Human Fertilisation and Embryology Act 2008 (the 2008 Act). The 2008 Act has removed the requirement that clinics consider the ‘need of [the future] child for a father’ before offering treatment¹⁸ and adopted additional means by which same sex couples can become the legal parents of a child born following assisted reproduction.¹⁹ Secondly, regulation has required increased quality control standards to prevent the transmission of disease and ensure good success rates—such regulatory interventions include those connected to the implementation of the EU Tissues and Cells Directive (2004/23/EC)—and quality control standards have been shown to result in the rejection of the majority of prospective donors.²⁰ Thirdly, donor recruitment rates have been affected by legislative changes to anonymity. Children conceived using donor gametes after April 2005 have been granted the right to seek identifying information about the donor when they reach eighteen.²¹ This has resulted in a drop in the number receiving treatment using donor gametes,²² although not in the overall

¹⁵ Ibid para 7.16.

¹⁶ Ibid para 7.40.

¹⁷ See BFS (n 1) 6 (‘just under 40% of registered DI cycles carried out in the UK in 2006 were single women and lesbian couples’) and HFEA (n 1) 3–4.

¹⁸ 1990 Act, s 13(5), as amended by 2008 Act, s 14(2)(b).

¹⁹ See eg 2008 Act, ss 35–47 (recognising a second woman as the other parent) and s 54 (recognising same sex couples as potential beneficiaries of a parental order).

²⁰ One study found that over 62% of recruited volunteers were rejected as sperm donors: S Paul, S Harbottle, and JA Stewart, ‘Recruitment of sperm donors: the Newcastle-upon-Tyne experience 1994–2003’ (2006) 21(1) Hum Reprod 150, esp 156.

²¹ 1990 Act, s 31ZA, as inserted by the 2008 Act and replacing HFEA (Disclosure of Donor Information) Regulations 2004/1511.

²² In 2005, there were 825 patients treated with donor sperm, compared to 651 in 2008: HFEA (n 1).

number of donors,²³ which suggests that most of those who donate for the treatment of others are now known donors (ie friends or family of the patient), who donate to only one family.²⁴ The profile of donors has also changed, with sperm donors now over twice as likely to be over 30 and already have children of their own.²⁵ Gametes are increasingly having to be sourced from abroad: about 20% of sperm donors and 2% of egg donors are from overseas, compared to 12% and 4%, respectively, in 2005'.²⁶

The last two decades have also seen additional demand for reproductive cells in research, supported by an expansion of the purposes for which embryo research is permitted by the 1990 Act. One reason for the increase in research uses for gametes is that it has become possible to extract stem cells from embryos²⁷ and embryonic stem cells are considered to have significant scientific and medical potential. All stem cells have the capacity to self-renew and become other types of more specialist cells. Bone marrow transplants, for example, involve stem cells that have the capacity to regenerate and become three types of blood cells: white blood cells, red blood cells and platelets. What is special about *embryonic* stem cells is that they have the potential to become any of the 200 or so cell types in the human body (ie they are pluripotent).²⁸ The hope is that it will be possible to reprogramme such cells for use in the treatment of a wide range of diseases for which there is currently no cure, such as diabetes, Parkinson's disease and certain types of heart disease.²⁹ It is also possible to derive stem cells from cloned embryos produced by the method used to create Dolly the sheep.³⁰ This technique involves taking an egg, removing its nucleus (a tiny sac containing genetic material) and replacing it with the nucleus taken from a somatic cell (ie a normal body cell). In the case of Dolly, the replacement nucleus was taken from a mammary gland cell—Dolly the sheep was named after Dolly Parton. The resulting embryo is formed without the use of sperm and is virtually genetically identical to the individual providing the somatic cell nucleus.³¹ Derived stem cells should therefore not be rejected by the body of the person from whose body the somatic cell is obtained, which could make them particularly useful for transplantation into the body of a sick patient. It is far too early to tell whether further research in this field will lead to the successful development of new forms of therapy. It should be noted that there is ongoing research into alternative sources of pluripotent stem

²³ In 2005, 251 men registered as sperm donors and 921 women as egg donors, whereas these numbers were 396 and 1,150 in 2008: HFEA (n 1) 4 and <<http://www.hfea.gov.uk/3411.html>>.

²⁴ See HFEA (n 1) 4. It has long been the case that egg donors are more likely to be known to the recipient than sperm donors: C Murray and S Golombok, 'Oocyte and semen donation: a survey of UK licensed centres' (2000) 15(10) *Hum Reprod* 2133.

²⁵ See <<http://www.hfea.gov.uk/3422.html#3425>>. See further the discussion in DW Riggs and L Russell, 'Characteristics of Men Willing to Act as Sperm Donors in the Context of Identity-Release Legislation' (2011) 26 *Hum Reprod* 266 and E Blyth and L Frith, 'The UK's Gamete Donor "Crisis" – A Critical Analysis' (2008) 28 *Critical Social Policy* 74.

²⁶ HFEA (n 1) 8.

²⁷ Stem cells were first extracted from human embryos in 1998: see JA Thomson and others, 'Embryonic Stem Cell Lines Derived from Human Blastocysts' (1998) 282 *Science* 1145.

²⁸ I am here referring to stem cells derived from an embryo that is between 5 and 14 days old: see further P Menendez and others, 'Human embryonic stem cells: potential tool for achieving immunotolerance?' (2005) 1(2) *Stem Cell Reviews* 151–158 and SD Pattinson, *Medical Law and Ethics* (3rd edn, Sweet & Maxwell 2011) esp 355–356.

²⁹ See eg HFEA, *Donating Eggs for Research: safeguarding donors* (HFEA, 2006) 4. See also the first embryonic stem cell trial in the UK: F Walsh, 'Europe's first embryonic stem cell trial at Moorfields', BBC News, 22 September 2011.

³⁰ See I Wilmut and others, 'Viable Offspring Derived from Fetal and Adult Mammalian Cells' (1997) 385 *Nature* 810.

³¹ They are not quite genetically identical because some genes are outside of the cell nucleus and these are not replaced by this technique: see MJ Evans and others, 'Mitochondrial DNA Genotypes in Nuclear Transfer-Derived Cloned Sheep' (1999) 23 *Nature Genetics* 90.

cells, which do not necessitate the use of eggs or the destruction of embryos.³²

The UK has a long history of embryo research and such practices are explicitly permitted by the 1990 Act under licence and subject to various conditions.³³ In particular, the research must be ‘necessary or desirable’ for one of the purposes listed by the Act.³⁴ There were initially five permitted purposes, but these were expanded in 2001 and then again in 2008 to the present eight.³⁵ As a result of amendments made by the 2008 Act, it is now clearer that the legislation permits embryo research intended to provide only scientific knowledge (ie basic, as opposed to applied research) and research into serious injuries not amounting to disease, such as spinal injuries.³⁶ The UK legislation also specifically permits the creation of embryos for research, as opposed to restricting research to embryos initially created for fertility treatment, and permits the creation of cloned embryos for research.³⁷ Few other countries have made this legislative move.³⁸ The creation of embryos for research is actually prohibited by Article 18(2) of the European Convention on Human Rights and Biomedicine (the Biomedicine Convention). This should not cause future problems for the UK, because if it were ever to sign and ratify the Biomedicine Convention, it could make a reservation to this provision under Article 36 on the basis that it has pre-existing legislation on the issue.

Together, the four regulatory developments outlined above have had a significant impact on gamete supply and demand for both treatment and research.

A. Incentives in the Current Regulatory Scheme

The 1990 Act empowered the HFEA to control the giving or receiving of ‘money or other benefit’ in respect of the supply of gametes by rendering such activities criminal unless authorised by Directions.³⁹ The HFEA has regularly reviewed compensation and incentives. Clinics were initially permitted to pay donors up to £15 per donation plus reasonable expenses.⁴⁰ Consultation in 1998 persuaded the HFEA not to remove this limited payment and it went on to permit rewarded *egg-sharing* in which a woman receives treatment at a reduced cost in exchange for donating some of her eggs.⁴¹ Rewarded egg-sharing was subsequently extended to the donation of eggs for research in exchange for reduced IVF fees.⁴² The reduction in cost of treatment is typically half or even the full cost of about £5,000 per cycle.⁴³ Sperm-sharing is permitted on equivalent terms.

In 2006, following consultation on the pending implementation of the Tissues and Cells

³² Non-embryonic body cells have been successfully reprogrammed to become pluripotent and these cells are known as induced pluripotent stem (iPS) cells: see K Takahashi and others, ‘Induction of Pluripotent Stem Cells from Adult Human Fibroblasts by Defined Factors’ (2007) 131 Cell 861 and J Yu and others, ‘Induced Pluripotent Stem Cell Lines Derived from Human Somatic Cells’ (2007) 318 Science 1917.

³³ 1990 Act, Sch 2 and the discussion in Pattinson (n 27) 361–363.

³⁴ 1990 Act, Sch 2, para 3A.

³⁵ HFE (Research Purposes) Regulations 2001/188 and the 2008 Act.

³⁶ See, in particular, Sch 2, para 3A(1)(b) (‘providing knowledge’) and Sch 2, para 3A(2)(a)–(b) (which refers to ‘other serious medical conditions’).

³⁷ 1990 Act, ss 3(1)(a) (creation of an embryo for research) and 1(1) (definition of an embryo).

³⁸ Exceptions include Belgium (Law of 11th May 2003, art 4) and Sweden (in legislation passed in 2005).

³⁹ ss 12(1)(e) and 41(8)/(9), 1990 Act.

⁴⁰ See HFEA, *Consultation on the Implementation of Withdrawal of Payments to Donors* (1998), para 1.2.

⁴¹ See HFEA, ‘Paid egg sharing to be regulated, not banned’, Press Release, 10 December 1998. This was confirmed in 2004: HFEA, ‘HFEA confirms UK position on payment for egg donors’, Press Release, 25 February 2004.

⁴² See HFEA, *Minutes of the meeting of the HFEA Ethics and Law Committee*, 16 January 2007, para 6.8.

⁴³ HFEA (n 1) 9.

Directive,⁴⁴ the HFEA removed the £15 direct payment and allowed only out-of-pocket expenses and a loss of earnings allowance capped at £250. In October 2011, after a further consultation,⁴⁵ the HFEA declared that it would take a more proactive approach to donor recruitment and retention in the period until its abolition.⁴⁶ It would allow those who donate gametes to receive a fixed sum for the expenses *and inconveniences* of donation: £750 per cycle for egg donors and £35 per visit for sperm donors. This level of compensation, which is expected to be implemented from mid-2012, is intended to provide financial recompense to ensure that donors do not lose out from donation ‘without attracting those who are merely financially motivated’.⁴⁷ With regard to donation for research, it falls short of the Nuffield Council on Bioethics’ recommendation for a pilot scheme of significant payments to women who donate eggs for research.⁴⁸ Thus, as things currently stand, the UK allows one form of incentive for gamete donation (rewarded gamete-sharing) and permits limited payment for the inconvenience of donation (which is intended to remove disincentives rather than incentivise donation).

Regulatory developments in the UK have taken place within an international context. There are three European instruments that seek to place restrictions on the offer of incentives for donation: the Biomedicine Convention of 1997, the EU Charter of Fundamental Rights of the European Union 2000 (the EU Charter), and the Tissues and Cells Directive.

Article 21 of Biomedicine Convention prohibits financial gain in the following terms: ‘The human body and its parts shall not, as such, give rise to financial gain’. The Convention does not define body ‘parts’ or elaborate on the phrase ‘as such’. The Explanatory Report states that Article 21 is to be interpreted as applying ‘the principle of human dignity set forth in the preamble and in Article 1’ and it includes blood, but not ‘such products as hair and nails, which are discarded tissues, and the sale of which is not an affront to human dignity’.⁴⁹ We also routinely discard both sperm (following male masturbation or sex with a condom) and eggs (in menstruation cycles), but gametes have value extending beyond that of hair and nails, and their sale is generally considered to be at least as problematic as the sale of blood.

As already stated, the UK has neither signed nor ratified the Biomedicine Convention. Nonetheless, the more general European Convention on Human Rights and Fundamental Freedoms (ECHR) is often said to be a ‘living instrument’⁵⁰ and it is increasingly being interpreted in the light of the Biomedicine Convention. In *Glass v UK*, the European Court of Human Rights cited the Biomedicine’s provisions on consent (Articles 5–9)⁵¹ and added that it did not consider UK law to be ‘in any way inconsistent with the standards laid down’ in the Biomedicine Convention in the area of consent’.⁵² More recently, in *MAK v UK*, the Strasbourg Court again cited the provisions on consent and declared that UK domestic law ‘fully accords’ with the Biomedicine Convention.⁵³ Many of the Strasbourg court’s citations of the Biomedicine Convention have been to the provisions on consent.⁵⁴ In *Vo v France*, the

⁴⁴ See HFEA, *SEED Report: A report on the Human Fertilisation & Embryology Authority's review of sperm, egg and embryo donation in the United Kingdom* (2005).

⁴⁵ HFEA (n 1)

⁴⁶ HFEA, ‘HFEA agrees new policies to improve sperm and egg donation services’, 19 October 2011.

⁴⁷ Ibid.

⁴⁸ Nuffield Council on Bioethics (n 7) para 57.

⁴⁹ Paras 131 and 132–133, respectively.

⁵⁰ See eg *Tyrer v UK* (1979-80) 2 EHRR 1, para 31.

⁵¹ See *Glass v UK* (2004) 39 EHRR 15, para 58.

⁵² Ibid, para 75.

⁵³ *MAK v UK* (2010) 51 EHRR 14, paras 31 and 77 (Arts 5–8).

⁵⁴ See eg *Evans v UK* (No.6339/05, 10 April 2007) (2008) 46 EHRR 34, para 40 (Art 5); *Özalp v Turkey* (No.32457/96, 8 July 2004); and *Juhnke v Turkey* (No.52515/99, 13 May 2008) (2009) 49 EHRR 24, para 56 (Art 5).

Strasbourg court cited the Biomedicine Convention's absence of a definition of 'everyone' in Article 1 in support of its interpretation of the Article 2 right to life of the ECHR.⁵⁵ France has signed the Convention but has yet to ratify it.

Interpreting the ECHR in the light of the Biomedicine Convention is only feasible where the relevant provision from the latter plausibly elaborates the former. Also, using the provisions of a non-binding instrument in this way can surely only be legitimate where there are additional reasons, beyond the provisions of the non-binding instrument, for accepting the relevant interpretation of the binding instrument. No provision in the EHRC plausibly requires its signatories to prohibit financial gain from body parts, although it is not difficult to interpret the EHRC as compatible with such a prohibition. Prohibiting persons from selling their gametes or services as a gamete donor would appear to engage the Article 8(1) right to private life, but Article 8(2) permits interference where it is in accordance with the law and is necessary for, *inter alia*, the protection of health or morals, or the protection of the rights and freedoms of others.

The Biomedicine Convention's prohibition is also incorporated into the EU Charter. Article 3 provides that the right to respect for a person's physical and mental integrity in 'medicine and biology' means 'in particular' that respect is to be given to 'the prohibition on making the human body and its parts as such a source of financial gain'. The Charter has been given legal force by the Lisbon Treaty, which came into effect on 1 December 2009. Under Article 6(1), the Charter is recognised by the EU as having 'the same legal value as the Treaties', although Article 51 states that the Charter does not extend the competence or powers of the EU. The UK, along with Poland, negotiated a protocol declaring that the Charter does not extend the jurisdiction of any Court within the EU or UK to find that any law, regulation, or administrative provision is inconsistent with the provisions of the Charter.⁵⁶ Thus, Article 3 cannot be considered to form part of English law. In any event, like the Biomedicine Convention, the EU Charter only prohibits making the body and its parts 'as such' a source of financial gain, the meaning of which will be considered presently.

The Tissues and Cells Directive has more direct legal relevance.⁵⁷ Article 12(1) requires Member States to 'endeavour to ensure voluntary and unpaid donations of tissues and cells'. It goes on to declare that donors may receive compensation 'which is strictly limited to making good the expenses and inconveniences related to the donation' and Member States may define the conditions under which such compensation is to be available. Article 12(2) requires Member States to 'endeavour to ensure that the procurement of tissues and cells as such is carried out on a non-profit basis'.

The Article 12 prohibition has a number of limitations. *First*, it uses the word 'endeavour' and thereby does not purport to lay down an absolute requirement. This flexibility permits Member States to meet demand by use of financial incentives. *Second*, while the Directive expressly applies to eggs, sperm and embryonic stem cells,⁵⁸ it only applies where these cells are 'intended for human application'.⁵⁹ As emphasised in recital 11, the 'Directive does not cover research using human tissues and cells'. It will, however, cover the creation of clinical grade embryonic stem cell lines where these are intended for human application at some future point. *Third*, the Directive does not define 'unpaid donation' except by declaring that it

⁵⁵ *Vo v France* (No.53924/00, 8 July 2004) (2005) 40 EHRR 12, paras 84–85 (Arts 1,2 and 18).

⁵⁶ Art 1(1).

⁵⁷ Even when not implemented, Directives give rise to interpretative obligations on national courts (*Marleasing SA v La Comercial Internacional de Alimentacion SA* [1990] ECR I-4135, para 8, and *Miret v Fondo de Garantía Salarial* [1993] ECR I-6911, para 20) and an 'unconditional and sufficiently precise' provision may be relied on directly against the State in the domestic courts (vertical direct effect): eg *Case C-152/84 Marshall v Southampton and South West Hampshire AHA* [1986] QB 401, para 46.

⁵⁸ Recital 7.

⁵⁹ Articles 2 and 3(d).

does not include compensation for the expenses and ‘inconveniences’ of the donation. This implies that the phrase ‘as such’ in the EU Charter is intended to be compatible with a distinction between impermissible ‘payment’ and permissible ‘compensation’ for inconvenience. Thus, the prohibition in Article 12 is only aspirational, does not apply to gamete donation for in vitro research, and does not encompass payment for the non-financial inconveniences of donation.

The Nuffield Council on Bioethics has drawn a distinction between ‘recompense’ (payment in recognition of losses incurred), ‘reward’ (material advantage that goes beyond ‘recompensing’ for incurred losses) and ‘purchase’ (payment in direct exchange for a ‘thing’).⁶⁰ Article 12 apparently expresses opposition to both purchase and financial reward, while supporting recompense. The line between reward and recompense is not straightforward, because payments that may merely remove a disincentive to one person may provide an incentive to another.

Gamete-sharing schemes clearly do not involve the ‘purchase’ of gametes in the sense of direct exchange of money for the gametes themselves. Egg-sharing does not involve the transfer of money, but it does involve a ‘payment’ that has a clear cash value equivalent. Donation of eggs for treatment (but not in vitro research) through an egg-sharing arrangement would seem to involve a reward of the type rejected by Article 12. The issue is that there is no additional inconvenience for which to compensate the donor where she does not undergo any procedures beyond those required for her own treatment. Yet, if we point to the possibility that the donor could later need to undergo an additional egg-removal cycle due to the donation of eggs that she would otherwise have frozen for her own future treatment, then we must still face the fact that the reduction of fees operates in practice as a financial incentive, ie as reward rather than mere recompense. The HFEA’s 2011 consultation concedes that ‘most egg sharers would not donate if there were no incentive to do so’.⁶¹ It is thus of significance that Article 12 lays down an aspiration rather than a strict requirement.

The rationale for Article 12 can be inferred from the Directive’s recitals, which also provide guidance on its proper interpretation. Recital 18 asserts the principle that ‘tissue and cell application programmes should be founded on the philosophy of voluntary and unpaid donation..., altruism of the donor and solidarity between donor and recipient’. Recital 19 apparently offers a justification of this principle: ‘Voluntary and unpaid tissue and cell donations are a factor which may contribute to high safety standards for tissues and cells and therefore to the protection of human health.’

The view, expressed in recital 19, that paying for tissue and cell donations may threaten human health relates to the Directive’s jurisdictional basis in Article 152(4)(a) of the EC Treaty (TEC), which has subsequently become Article 168(2)(4)(a) of the EU Treaty (TFEU). This provision provides for legislative competence to adopt ‘measures setting high standards of quality and safety of organs and substances of human origin, blood and blood derivatives’. It also forms the jurisdictional basis of the earlier Blood Directive (2002/98/EC); Article 20 of which requires Member States to seek to ‘encourage voluntary and unpaid blood donations’. Indeed, widespread incidents of HIV/AIDS blood contamination in the 1980s provided the political impetus for the inclusion of this jurisdictional competence in the Treaty of Amsterdam.⁶²

The link between (some forms of) payment and increased risk to human health—which is expressed rather tentatively in recital 19—was seminally suggested by the sociologist

⁶⁰ Nuffield Council on Bioethics (n 7) para 2.44.

⁶¹ HFEA (n 1) 12. See also F Rapport, ‘Exploring the beliefs and experiences of potential egg share donors’ (2003) 43 *Journal of Advanced Nursing* 28 and Nuffield Council on Bioethics (n 7) para 5.28.

⁶² See A-M Farrell, ‘Is the Gift Still Good? Examining the Politics and Regulation of Blood Safety in the European Union’ (2006) 14 *Med LR* 155, 157–158.

Richard Titmuss in the context of blood donation in his book *The Gift Relationship*.⁶³ Titmuss cited evidence from the 1960s that suggested that recipients of blood sources from paid donors had higher rates of hepatitis than recipients who received blood from voluntary, unpaid donors.⁶⁴ This may be explainable on the basis that financial incentives attract different types of donors and they have an incentive to hide information about their health status that could lead to rejection and thus non-payment. As Farrell has pointed out, those in favour of financially rewarded blood donation reject the relevance of data from the 1960s and 1970s arguing that there are now 'stricter donor-screening protocols, more sophisticated testing and viral inactivation methods'.⁶⁵ Farrell goes on to analyse HIV/AIDS blood contamination episodes in the UK and France during the 1980s to highlight the inadequacy of what Titmuss referred to as the 'gift relationship' on its own for assessing risks to blood safety.

Applied to the donation of gametes, the concern would be that financially rewarded donors would be more likely to carry or hide transmissible infection or genetic disease. The major infections and genetic conditions should be caught by donor-screening protocols and blood tests,⁶⁶ but that still leaves the possibility of those that are unknown or not checked.⁶⁷ There are a number of points to make about the adequacy of this claim as a justification for prohibiting the provision of incentives to gamete donors. While studies have demonstrated that the risk of disease transmission in blood donation is greater with paid donors than with unpaid donors,⁶⁸ there have been no studies demonstrating that paid gamete donation carries greater risk of transmitting genetic or infectious disease than gametes from unpaid donors.⁶⁹ This perhaps explains why the risk to recipients was not cited by the HFEA to support its view that payment should be prohibited in its consultation in 2005. Even if such an increased risk could be established, its relevance would be restricted to donations of the type covered by the Directive, namely, those intended for human application. Infection cannot be transferred to a recipient and a child cannot be born with a genetic disorder where the material is only used for in vitro research. It would also seem to have little relevance to egg-sharing arrangements, because patient donors will have been screened and tested for their own treatment over an extended period of time and be motivated to maximise their own chances of having a healthy child. In short, the effect of incentives on the quality of the gametes donated is only relevant to direct financial rewards for donation for treatment and even then such concerns are insufficient to justify a ban on incentives. A purposive reading of the Directive by reference to recital 19 and its jurisdictional basis would therefore support interpreting the requirement to endeavour to ensure unpaid (gamete) donation in terms of the possible health effects to the recipient of *direct financial reward* for donation for treatment or applied research.

Recital 18, which refers to the value of 'altruism' and 'solidarity between donor and recipient', suggests slightly wider purposes for the Directive. The Nuffield Council defines an altruistic action as 'one that is primarily motivated by concern for the welfare of the recipient of some beneficent behaviour, rather than by concern for the welfare of the person carrying

⁶³ RM Titmuss, *The Gift Relationship: From Human Blood to Social Policy* (George Allen and Unwin 1970).

⁶⁴ Ibid, especially ch 11.

⁶⁵ Farrell (n 62), 161.

⁶⁶ N Garrido and others, 'Sperm and oocyte donation selection and management: experience of a 10 year follow-up of more than 2011 candidates' (2002) 17 Hum Reprod 3142.

⁶⁷ Eg BBC, 'Donor sperm safety "in question"' BBC News (Friday 30 October 2009) <<http://news.bbc.co.uk/1/hi/health/8316814.stm>>.

⁶⁸ Eg T Eastlund, 'Monetary blood donation incentives and the risk of transfusion-transmitted infection' (1998) 38 Transfusion 874.

⁶⁹ T Eastlund, 'Willingness of volunteer blood donors to be volunteer semen donors' (2003) 80(6) Fertility and Sterility 1513 at 1513. See also Nuffield Council on Bioethics (n 7) para 6.17.

out the action'.⁷⁰ It defines 'solidarity' as the idea that 'we're all in this together', which has 'an implication of mutual obligations and mutual support within a definable community'.⁷¹ On these plausible definitions, egg-sharing may not be altruistic, but it remains consistent with solidarity because it 'reinforces the notion that many other couples are "in the same boat"'.⁷²

Overall, the Tissues and Cells Directive does not require the UK to prohibit the provision of incentives to gamete donors and its relevance is largely restricted to the provision of financial rewards to those who donate gametes for the treatment of others.

III. A NATIONAL SYSTEM AND INCENTIVISING POTENTIAL GAMETE DONORS

The case for allowing financial incentives for gamete donation has received detailed consideration in the academic literature⁷³ and in the policy documents of bodies such as the HFEA and the Nuffield Council on Bioethics.⁷⁴ Three analogies have particular force against the widespread assumption that a ban is ethically required: the analogy with risky employment (eg working on an oil-rig or in a deep mine or working as a professional boxer, racing car driver, or fire-fighter), the analogy with existing commercialisation (80% of IVF is private and, in the words of Robert Winston, 'IVF has become a massive commercial industry'⁷⁵), and the analogy with the paid participation of healthy volunteers in clinical trials of pharmaceutical products (volunteers in clinical trials are permitted to receive large payments, subject to conditions such as the approval of an ethics committee).⁷⁶ The risky employment analogy points out that other accepted paid activities carry significant risks or consequences and many give rise to no greater potential benefits, yet they are regulated rather than prohibited. The analogy with existing commercialisation points out that professionals who use donor gametes to treat or research are paid, often handsomely, for their services and the involuntarily childless now routinely pay large sums for access to assisted reproduction. The analogy with first-in-human trials points out that volunteer participants are 'overwhelmingly' motivated by the offer of financial reward.⁷⁷ Together these three analogies support a strong presumption in favour of providing a financial reward for the time, effort and inconvenience of gamete donation for both treatment and research, and they can be used to respond to many of the standard arguments against rewarding donors.

By way of example, consider the relevance of the risky employment and first-in-human trials analogies to the view expressed by the HFEA in its 1998 consultation that financial incentives are to be rejected on the basis that is 'possible' for a donor to be 'financially induced' and this 'might compromise the ability of the donor to consider fully the implications of the donation'.⁷⁸ Those who, say, box professionally, work in a deep mine or

⁷⁰ Nuffield Council on Bioethics (n 7) 231.

⁷¹ Ibid 121.

⁷² Ibid para 5.46.

⁷³ See eg KR Daniels, 'To give or to sell human gametes – the interplay between pragmatics, policy and ethics' (2000) 26 *Journal of Medical Ethics* 206; B Steinbock, 'Payment for Egg Donation and Surrogacy' (2004) 71 *Mount Sinai Journal of Medicine* 255; and I Hyun, 'Fair payment or undue inducement?' (2006) 443 *Nature* 629.

⁷⁴ See HFEA (n 1) and Nuffield Council on Bioethics (n 7).

⁷⁵ BBC, 'Expert says IVF couples exploited' (Thursday 31 May 2007) <<http://news.bbc.co.uk/1/hi/health/6707175.stm>>.

⁷⁶ See Medicines for Human Use (Clinical Trials) Regulations 2004/1031, Sch 3, Part 1 (ethics committee authorisation), but cf Sch 1, Part 4, para 8 (children) and Sch 1, Part 5 (incapacitated adults).

⁷⁷ Nuffield Council on Bioethics (n 7) para 6.9.

⁷⁸ HFEA (n 10) para 1.6. See also the report of the Australian Senate Committee: Senate Legal and Constitutional Affairs References Committee, *Donor Conception Practices in Australia* (10 February 2011) para 7.41.

work on an oil rig can suffer serious inconvenience, injury or even death and it is similarly 'possible' that they will have been 'financially induced' to participate, particularly those from disadvantaged backgrounds who have been subject to significant financial and social pressures.⁷⁹ The benefits of donation for the treatment of others or medical research are at least as compelling as the benefits associated with these other activities, especially with regard to professional sports. To respond by reference to the higher quality of consent that is generally required for consensual bodily interventions and procedures in a medical context runs into the healthy volunteer trials analogy, which demonstrates acceptance of procedural mechanisms beyond outright prohibition for ensuring voluntariness in a medical context.

The three analogies do have evident limitations; some of which are more significant than others. Since the purportedly analogous activities do not involve the purchase of persons or body parts, appeal to these analogies does not support the commodification (purchase) of gametes,⁸⁰ but these analogies do support the reward and recompense of donors. More significantly, these analogies do not fully address the concern that allowing financial incentives ultimately advantages the rich and powerful over the poor and vulnerable. It may be objected that the above analogies are satisfied by safeguards that are inadequate to ensure that proper account is taken of justice, equity and non-commercial research priorities. The risky employment analogy has nothing to say about those who can pay more than their competitors. The analogy with existing commercialisation reminds us that significant inequalities already exist; for example, those who can afford to attend the more expensive clinics or travel within and beyond the UK already have a greater range of opportunities than those reliant upon NHS-funded treatment. The analogy with healthy volunteer trials reminds us that referral to an ethics committee is one way to limit the magnification of inequalities, but perhaps more would be required to ensure that appropriate access to IVF treatment does not become even more expensive due to the cost of paying donors and that the priorities of embryo research are not left to large commercial entities. One way of addressing such issues is by putting control of payment and, most crucially of all, distribution of acquired gametes into the hands of a national non-profit body.⁸¹

The HFEA did not address financial incentives in its 2011 consultation, at least in part because it was operating on the assumption that the "law prohibits the payment of donors"⁸² (on which see above). But we have seen that the latest policies of the HFEA do set fixed sum payments for those who donate (albeit payments tracking recompense rather than reward) and it is worth noting that others have expressed support for the idea of rewarding those who donate gametes for research (not least of which is the recent report of the Nuffield Council, which heavily relies on the analogy with healthy volunteer trials).⁸³ Nonetheless, support for a national donation system is much stronger than support for financial incentives and there are other types of incentives that are more likely to attract support. The rest of this article will therefore focus on the potential of a national gamete donation system to use the allocation of gametes to incentivise additional donations.

The existing system for the donation and allocation of bodily materials for transfusion and transplantation into patients is currently administered by NHS Blood and Transplant (NHSBT). This body operates in accordance with regulatory guidance set by other regulatory

⁷⁹ As one of the reviewers has noted, employees in such risky environments have high level insurance cover and it maybe that introducing rewards for gametes would require increased insurance cover.

⁸⁰ For objections to the commodification of body parts see eg CB Cohen, 'Selling Bits and Pieces of Humans to Make Babies: *The Gift of the Magi* revisited' (1999) 24 *Journal of Medicine and Philosophy* 288; and HFEA (n 3) para 26.

⁸¹ Cf CA Erin and J Harris, 'A Monopsonistic Market: or How to Buy and Sell Human Organs, Tissues and Cells Ethically' (2004) 15 *Fulbright Papers* 134.

⁸² HFEA (n 1) 8.

⁸³ Nuffield Council on Bioethics (n 7) esp paras 6.74 and 6.81.

bodies, including the Human Tissue Authority (HTA)—a body that is to have the same fate as the HFEA.⁸⁴ NHSBT has been relatively successful in controlling supply and demand for blood. Blood shortages in the UK are now rare,⁸⁵ although blood supplies remain under constant pressure and there have been seasonal shortages of some blood groups.⁸⁶ One reason for the constant pressure is that donors represent a tiny minority of potential donors: according to NHSBT, ‘96% of us rely on the other 4% to give blood’.⁸⁷ The problem is far worse for the supply of solid organs, where shortages mean that hundreds of patients die each year from organ failure while waiting for a transplant.⁸⁸ NHSBT has adopted detailed procedures to ensure that organs donated for transplantation are fairly and appropriately matched and allocated to patients.⁸⁹ Patients waiting for transplants are registered on the National Transplant Database and a computer programme is used to identify the best matched patients (taking account of factors such as blood group, age, and size of both the donor and recipient) or, alternatively, the transplant unit to which the organ is to be offered. The relevant criteria are ‘determined by the medical profession in consultation with other health professionals, the Department of Health and specialist advisory groups’.⁹⁰ The resulting allocation algorithms are complex and vary according to the type of organ. In complex cases patients are prioritised according to a point score, whereby organs are allocated to the patients with the highest number of points. Points are allocated for factors such as time on the waiting list, tissue match, age difference between donor and patient, location of the patient relative to the donor, etc. NHSBT assessment and allocation policies have not gone without academic criticism,⁹¹ but generally seem to operate fairly.

If the UK were to extend the remit of the NHSBT (or set up an equivalent body) to administer gamete acquisition and allocation, it could remove the significant regional variations and inequalities of access that currently beset the use of donor gametes in fertility treatment and it could enable centralised support for research uses of gametes. The considerations of justice, transparency and equality that apply to organ donation for transplantation have equivalent relevance to gamete donation. The adoption of a points-based system for the allocation of gametes for treatment would similarly enable a range of factors to be properly balanced in the just distribution of this scarce resource.

Identifying and weighing the relevant factors for gamete donation can only use the organ donation system as a model if the differences between the two types of donation are recognised. The two systems have different goals: organs donated for transplantation are used to replace the functions of failing organs, whereas gametes donated for fertility treatment are

⁸⁴ As a result of the Human Tissue Act 2004, the HTA is currently responsible for regulating the removal, storage and use of tissue (other gametes and embryos) for research, medical treatment, post-mortem examination, teaching and public display.

⁸⁵ In 2009-10, NHSBT managed to meet 99.9% of blood product requests: NHSBT, *Annual Review 2009/10: Saving and Improving Lives* 10.

⁸⁶ See Chief Medical Officer’s National Blood Transfusion Committee, *A Plan for NHS Blood and Transplant and Hospitals to address Red Cell Shortages* (2009), esp para 2.2, Nuffield Council on Bioethics (n 7) 18. In 2009-10, NHSBT managed to meet 99.9% of blood product requests: NHSBT, *Annual Review 2009/10: Saving and Improving Lives* (NHSBT 2010) 10.

⁸⁷ <<http://www.blood.co.uk/>>.

⁸⁸ In the year to the end of March 2010, 552 patients died while on the waiting list for a transplant: NHSBT, *Activity Report 2009/10: Transplant Activity in the UK* (, 2010), 1. This figure does not reveal the full picture, because not all those who could benefit from an organ are put onto the waiting list: Department of Health, *An Investigation into Conditional Organ Donation: The Report of the Panel* (HMSO 2000) para 3.17.

⁸⁹ See <www.organdonation.nhs.uk> for the current policies, practices, and statistics.

⁹⁰ *ibid.*

⁹¹ See eg L Cherkassky, ‘Economy or Mortality? The Secret World of Liver Transplant Candidate Assessment’ (2011) 11(1) *Med LI* 23.

used to address involuntary childlessness.⁹² It follows that whereas the relative medical urgency of a transplant can be measured in terms of the predicted time until organ failure, the relative medical urgency of fertility treatment would need to track the predicted time left for which pregnancy is a realistic and appropriately safe prospect.⁹³ Time on the waiting list raises the same considerations of justice and equity and can be identified in the same way for both systems. In the case of gamete donation, it may also be appropriate to give weight to the need for gametes to avoid the transmission of serious genetic disease, since this can be identified by medical criteria, is already regarded as a relevant factor by the 1990 Act,⁹⁴ and generally has a wider impact on healthcare resources. One way of doing this would be grant those who require gametes to avoid the transmission of a genetic disease points corresponding to something like the number of points obtained after the mean waiting time.⁹⁵ The organ allocation system thus provides a model for some aspects of a gamete allocation system but not all. We have seen that the organ allocation system has a procedure for reviewing and establishing the specific weight given to the factors identified as relevant, a similar procedure is required for gamete allocation if it is to be made transparent and removed from the unregulated discretion of individual clinics.

At present, prospective parents select individual donors on the basis of their traits, such as matching physical characteristics and ethnic background. If we continue to accept this practice (and such selection is controversial),⁹⁶ the larger pool of gametes held by a national system should facilitate such choices. The allocation system could take account of patient-specified matching criteria, whereby the gametes of donors who have certain characteristics are allocated only to those who have specified those characteristics or have chosen not to express any such preference.

The national coordination of gamete donation would also enable the implementation of other methods of encouraging gamete donation, which will be explored below.

A. Mirror Exchange

An additional feature of the national system for managing organ donations from living donors for transplantation is that it admits a type of non-financial incentive. It allows ‘mirror exchange’, whereby recipient X recruits a donor to supply an organ in exchange for an organ supplied by someone recruited by recipient Y. Two types of mirror organ exchange programme are currently administered by NHSBT. The first is ‘paired donation’. Imagine that Arthur needs a kidney transplant and has a willing donor but that donor is not a suitable tissue match. If Bella is in the same position she could receive the kidney from Arthur’s donor and Arthur would receive the kidney from Bella’s donor. Alternatively, there is ‘pooled donation’. Imagine that Bella’s donor is not a tissue match for Arthur, and Celia also

⁹² For studies of the psychological effects of involuntary childlessness and the positive effects of even unsuccessful IVF, see M Hull, *Infertility Treatment: Needs and Effectiveness. A Report from the University of Bristol Department of Obstetrics and Gynaecology* (Serond Laboratories, 1992); S Koropatnick and others, ‘Infertility: a Non-event Transition’ (1993) 59 *Fertility and Sterility* 163; J Boivin and others, ‘Reactions to Infertility Based on the Extent of Treatment Failure’ (1995) 63 *Fertility and Sterility* 801; and J Boivin and L Schmidt, ‘Infertility-related stress in men and women predicts treatment outcome 1 year later’ (2005) 83 *Fertility and Sterility* 1745, 1745.

⁹³ On which see G Pennings, ‘Postmenopausal Women and the Right of Access to Oocyte Donation’ (2001) 18 *Journal of Applied Philosophy* 171.

⁹⁴ See Sch 2, 1Z1(1)(b) of the 1990 Act, which permits embryo testing to avoid the transmission of a gene, chromosome or mitochondrion abnormality.

⁹⁵ Use of this measure is suggested for a different purpose in G Pennings, ‘Gamete Donation in a System of Need-Adjusted Reciprocity’ (2005) 20 *Human Reprod* 2990, 2992.

⁹⁶ See the discussion in J. Harris, ‘Assisted Reproductive Technological Blunders (ARTBs)’ (2003) 29 *Journal of Medical Ethics* 205 at 206.

needs a kidney and has a willing donor who is not a match to her. It is possible to arrange a chain of paired donations if Arthur's donor is a match for Celia's donor and Celia is a match for Bella's donor.

Since the current gamete donation system permits the donation of gametes to someone you know or a stranger and the organ allocation system permits paired and pooled donation, few ethical issues should be raised by putting the two together to provide for the paired and pooled donation of gametes. The Tissues and Cells Directive applies equally to both activities and paired/pooled donation is explicitly approved by the legalisation governing transplantation.⁹⁷ Indeed, if we accept that rewarded egg-sharing is consistent with the values of altruism and solidarity, as evoked by the Tissues and Cells Directive, then it is difficult to avoid the conclusion that a mirror system for gamete donation is also to be regarded as compatible with those values.

Applied to gametes, it would usually be the partner of the infertile person who provides the donor contribution. Like paired and pooled organ donation, this need not be the case. The donor could be someone else close to the person in need who is willing to help but unable to donate directly to that person. In the case of gamete donation, the inability to donate directly to the person in need could stem from the impermissibility of mixing the gametes of close genetic relatives.⁹⁸ A sister is not, for example, able to donate eggs directly to her brother so that he can have children with his partner, but she would be able to donate in a mirror exchange system to enable her brother to receive an egg from another donor. With gametes, unlike organs, the donor could even be the person who wishes to receive donor gametes from another. A single woman would be able to donate her own eggs in exchange for the sperm of a man whose female partner is infertile. It is difficult to predict the extent to which a mirror exchange system modelled on that applying to organs would increase the supply of gametes for treatment, but these hypothetical examples suggest it could be attractive to at least some of those who would not otherwise donate. Mirror exchange has already been shown to be successful for organs: in the last year 'paired and pooled donations contributed more than 60 kidney transplants between them'.⁹⁹ The two examples just presented also highlight the relevance of altruism (the first example) and solidarity (particularly the second example) to gamete mirror exchange.

Unlike organ donation, where both pairs donate and receive the same organ, the donor in one pair will often be shouldering more of a burden than the donor in the exchange couple. Sperm donation involves a series of appointments for health screening and blood and semen tests, but the donation itself is not invasive.¹⁰⁰ Whereas egg donation involves hormonal medication, ultrasound scanning, and a surgical procedure to remove the eggs; and this process carries the risk of complications, such as ovarian hyperstimulation syndrome (OHSS).¹⁰¹ In short, egg donation is more invasive and risky than sperm donation. One possible response would be for the mirror exchange programme to adopt the approach taken in egg-sharing arrangements, whereby egg donation is restricted to situations where the woman is already having eggs removed for her own IVF treatment.¹⁰² But such a response is likely to create or

⁹⁷ Human Tissue Act 2004 (Persons who Lack Capacity to Consent and Transplants) Regulations 2006/1659, reg 12(4).

⁹⁸ The HFEA has decided to adopt an explicit ban this practice, even though there are no known cases of UK clinics mixing the gametes of close genetic relatives: HFEA, 'HFEA agrees new policies about family donation and the number of families one donor can create' Press Release, 14 July 2011.

⁹⁹ NHSBT, *Activity Report 2010/2011: Transplant Activity in the UK* (August 2011) 1.

¹⁰⁰ See Nuffield Council on Bioethics (n 7) para 1.17.

¹⁰¹ Ibid.

¹⁰² Directions given under the Human Fertilisation and Embryology Act 1990: Giving or receiving money or other benefits in respect of any supply of gametes or embryos (Ref.D.2001/1) para 5, available at <http://www.hfea.gov.uk/docs/D2006_1.pdf>.

increase another disparity, namely, unequal numbers of egg and sperm donors suitable for mirror exchange. It is also unnecessary, because it is inappropriate paternalism to prevent a woman from deciding for herself whether the disparity is one that she is prepared to accept and there is no disparity in the benefit that both couples will receive from the exchange—both couples receive the gametes they need to have children.

The analogy with living organ donation supports the view that mirror exchange is an acceptable system to apply to gametes and demonstrates how a national gamete donation system could facilitate the adoption of ethical incentives. The next section will consider the possibility of adjusting the mirror exchange system to take account of additional factors and thereby adopting an indirect mirror exchange system as a preferable alternative to strict mirror exchange.

B. Indirect Mirror Exchange

According to Pennings, the strict reciprocity of mirror exchange is problematic because it excludes several groups. It excludes those who have ‘medical and/or genetic contraindications’ to participation, such as being too old to donate, and those who have few family members or friends of the right age and sex to ask to become donors.¹⁰³ It also excludes those prospective parents who do ‘not intend to disclose the donor origin of their child’, as participating in a mirror exchange system in which donor anonymity is not assured would ‘seriously jeopardise this goal’.¹⁰⁴

The exclusion of such groups from a mirror exchange system does highlight a tension between its strict reciprocity and the interests of justice and equity tracked by the points-based system. Pennings offers an alternative way of addressing this tension, whereby we may take account of the willingness to donate or encourage others to donate while retaining equity, justice and need as the primary governing principles. He suggests that a point system could and should be combined with an indirect form of exchange, whereby bonus points are ‘allocated for the contribution of the partner’ and for partners who ‘sincerely intend to contribute’.¹⁰⁵ If need and equality are to remain governing principles, then non-contributors must still be able to reach the top within a reasonable time. Pennings therefore further suggests that the number of bonus points awarded for gamete contributions should correspond to something like the number of points obtained after the mean waiting time.¹⁰⁶

Pennings’ proposal seems to represent an ethical way of incentivising further gamete donations. In addition to the argument by analogy with mirror exchange for the ethical acceptability of taking account of donor contributions, it can be argued that such a system would encourage recipients to do what they ought to do. A number of theorists have advanced the view, premised in the idea of ‘special rights’ (Hart), or the ‘principle of fairness’ (Rawls), that those who receive a benefit from their voluntary participation in a cooperative system are morally required to contribute their share to that system.¹⁰⁷ Such a view could also be considered to be an element of the notion of solidarity, which is appealed

¹⁰³ Ibid 2991.

¹⁰⁴ Ibid. There are, however, reasons for not encouraging parents to act according to this goal, not least are the potential effects of such secrecy and deception on the resulting child: see HFEA, Code of Practice (8th edn, version 4, October 2011) para 20.7.

¹⁰⁵ Pennings (n 95) at 2992 and 2993.

¹⁰⁶ Ibid 2992.

¹⁰⁷ See HLA Hart, ‘Are There Any Natural Rights?’ (1955) 64 *Philosophical Review* 175 at 185, and J Rawls, *A Theory of Justice* (Oxford University Press 1973). See further R Nozick, *Anarchy, State and Utopia* (Blackwell 1974), AJ Simmons, ‘The Principle of Fair Play’ (1979) 8 *Philosophy & Public Affairs* 307, and A Gewirth, *Reason and morality* (University of Chicago Press 1978) 284–288.

to by recital 18 of the Tissues and Cells Directive. The willingness to give before one takes instantiates the principle of solidarity.

Pennings' proposal does not, however, address other limitations of the mirror exchange system. One is particularly relevant to the focus of this article: mirror exchange is incapable of encouraging and rewarding donor contributions that are not directly exchanged for gametes. This includes the donation of eggs for research. Another is significant for those who are not persuaded by the above response to the additional burden of egg donation compared to sperm donation,¹⁰⁸ ie the fact that the mirror exchange system cannot treat egg donation as more valuable than sperm donation. The essential issue is that Pennings envisages the donor contribution to be gametes (eggs exchanged for sperm and vice versa, where both are accorded equal worth) supplied by the infertile person's partner.

It is true that we need to be careful not to include too many factors in a points system to ensure that it is practical to run and transparent for patients.¹⁰⁹ But if we accept the permissibility and practicality of a points system in which gamete contributions are granted points, it is but a small step to grant points to all donations of bodily materials for treatment or research. This would include the allocation of points for egg donation for research and for donations of other bodily material.

The number of bonus points allocated for the contribution would need to be proportionate to the value of the donated bodily material and other morally relevant factors, such as medical urgency and waiting time. It has already been suggested that setting this level would need to be done in a similar way to what currently takes place for organ allocation. Once the relevant level of points is set, this information can be easily conveyed to patients using a simple table or information sheet, and then programmed into a computer for the selection of recipients from those on the waiting list.

Imagine a heterosexual couple who require sperm because the male partner does not produce sperm. The female partner may be willing to donate her eggs in exchange for quicker access to donor sperm, but not be willing for another woman to have 'her' child if her own treatment were unsuccessful.¹¹⁰ If she is willing to consider donation for research, she could be told that donating eggs for research would give her a specified number of bonus points (which could be set according to the number granted for the mean waiting time) and given the opportunity to choose between a set number of research projects (no more than say five) that have been approved for donor recruitment at that clinic or regional hub. None of these projects would involve research taking place at the clinic at which this patient is receiving treatment to minimise the likelihood that the clinic will put (witting or unwitting) pressure on her to donate for research or for their particular project.

A key potential objection to taking account of gamete donation for research when allocating donor gametes for treatment would seem to be that gamete donation for research is less important or at least not sufficiently important to justify national facilitation via such a system. Such an objection overlooks the fact that the UK legislation already accepts the permissibility of research using gametes and embryos (see above) and the importance of such research to the maintenance and development of medical treatment, including past and future infertility treatment.

¹⁰⁸ Such as one of the reviewers of this article. See also A. P. Ferraretti and others, 'Semen Donor Recruitment in An Oocyte Donation Programme' (2006) *Human Reprod* 2482, 2484, which goes on to propose an alternative form of indirect mirror exchange, which addresses this concern but only encourages sperm donation for treatment.

¹⁰⁹ Pennings (n 95) 2992.

¹¹⁰ The live birth rate for IVF per cycle is only 24.1% and the donor insemination birth rate per cycle is only 11.5%: HFEA, *Fertility Facts and Figures 2008* (December 2010) 4.

Imagine, instead, a lesbian couple where both women have healthy eggs but are too old to be accepted as egg donors for another's fertility treatment.¹¹¹ If they are willing to contribute blood for the next two years in exchange for quicker access to donor sperm, they could be told that they may obtain a set number of bonus points to improve their waiting list ranking by committing to one of the recognised donation schemes. Blood transfusions can be life-saving and blood supplies are under constant pressure, yet blood donation is a relatively simple process and raises far fewer issues for the donor compared to gamete donation. On the face of it, there seems to be no reason why rewarding contributions in a points-based system could not also reward previous and prospective blood donations from the person or couple who are to receive treatment. The level of points granted for blood donation compared to gamete donation would need to be set periodically in accordance with supply and demand. I have deliberately chosen blood donation as the example because the case for rewarding blood donation to increase supply is much weaker than the case for rewarding donations of solid organs.

There are at least two plausible objections to extending indirect mirror exchange beyond donor contributions of gametes.

The first plausible objection is that there is already a *prima facie* ethical obligation to donate blood, unlike gametes, and it is inappropriate to reward people for doing what they already have an obligation to do. There are good reasons to accept the first part of this claim. The conditions for the imposition of moral duties to assist those in need have been fully explored in the literature.¹¹² These are: (1) the assistance must be required to protect another's important interests; (2) the person on whom the burden of assistance falls must be in a position to assist; (3) the assistance must not impose an unreasonable burden; and (4) the persons requiring assistance must not be in a position to self-assist. Blood donation required for life-saving transfusion generally satisfies those conditions, because it is clearly needed to protect another's important interests, you know or ought to know that this is so, providing blood does not *usually* impose an unreasonable burden on you relative to the life of those in need of blood, and those in need of an blood transfusion are usually in no position to assist themselves. In contrast, gamete donation (like organ donation) generally involves a disproportionate burden on the assister. Gamete donation is likely to engage deep social and moral beliefs, because embryo research involves the destruction of an entity that could develop into a human person and donated gametes used for fertility treatment are intended to create a biological child who will be able to obtain identifying information about the donor at the age of 18. Egg donation also requires drug-induced stimulation of the ovaries and invasive surgery with attended risks to health and even life. Thus, there is indeed already a *prima facie* obligation to donate blood but not such an obligation to donate gametes.

The second part of the first plausible objection is less convincing because the existence of a duty to assist does not imply the impermissibility of seeking to motivate people to act in accordance with their moral obligations. The law does not generally enforce duties to assist individuals¹¹³ and does not generally require individuals to assist the achievement of social goods, save through taxation. One exception to the latter is jury participation, which the HFEA previously used analogically to set the maximum daily compensation level for gamete

¹¹¹ Egg donors must be aged between 18 and 35 years old: Nuffield Council on Bioethics (n 7) para 3.13.

¹¹² See SD Pattinson, 'Consent and Informational Responsibility' 35(3) *Journal of Medical Ethics* 176 and further Gewirth (n 107), J Harris, *The value of life: an introduction to medical ethics* (Routledge, 1985) chs 2–3, esp 57; P Singer, *Practical ethics* (Cambridge University Press 1993) 229–246; and Rawls (n 107). 114. Cf Nozick (n 107)

¹¹³ See eg *Capital and Counties v Hampshire* CC [1997] QB 1004 at 1035, per Stuart-Smith LJ, and *Re F* [1990] 2 AC 1 at 77–78, per Lord Goff.

donation.¹¹⁴ Jury service is necessary for the maintenance of a criminal justice system of the type adopted in the UK and can place considerable burdens on jurors in relation to freedom of speech and physical liberty during a trial.¹¹⁵ These burdens do not, however, involve the physical invasion of one's body, are less likely to give rise to legitimate conscientious objection and can be legally enforced in an ethically appropriate and proportionate manner. Thus, rewarding compliance with positive duties to donate blood is generally preferable to legally enforcing such duties.

The second plausible objection to extending points-based allocation to encompass donor contributions of blood is that such an action would be counterproductive because it would negatively affect blood donation rates and threaten the motivational effect of altruism and solidarity within the current blood donation system. A similar objection to this was made by Titmuss, who argued that allowing payment for blood donation would negatively affect the 'gift relationship',¹¹⁶ in the sense that payment would discourage altruistic donation and weaken the persuasive force of the argument of solidarity. Of course, Titmuss did not himself consider benefits-in-kind of the kind adopted in an indirect mirror exchange system and there is no empirical research on this matter. Such an objection could therefore not support the blanket exclusion of rewarding blood and solid organ contributions in an indirect mirror exchange system, rather it points to the need to pilot the system first.

Any new gamete allocation system will need to be piloted before being adopted. The idea that rewarding donor contributions when allocating gametes could increase the supply of gametes is supported by the trial of a less ambitious system.¹¹⁷ The present proposal is more ambitious because it envisages a system of gamete allocation that takes account of gamete donations for treatment, gamete donations for research and even donations of other bodily materials for transfusion and transplantation. Such a system is likely to fail to motivate additional donations if those in need of gametes are not incentivised by what they expect to get in return for their contribution, and this will require carefully piloting and monitoring. That is not to suggest that the ethical justification for indirect mirror exchange is coterminous with its predicted success at increasing donor contributions. At least parts of its justification stems from the view that it is fair and appropriate to take account of the willingness to donate bodily material when allocating gametes, and this is supported by the principle of solidarity.

C. Returning a Donation to the Allocation Pool

Creating embryos outside the body for assisted reproduction can result in the creation of more embryos than are immediately implanted into a woman's body—sometimes referred to as 'spare' or 'surplus' embryos. At present, such embryos created using a donor egg or sperm may be frozen and kept within the statutory storage period¹¹⁸ as long as neither gamete provider withdraws consent. Many of these stored embryos will be discarded months or years later when those receiving treatment decide that they have no more use for them or the statutory storage period expires. Donation to another woman or couple is a possibility but not a requirement. This is so even though destruction is likely to frustrate the intentions of the gamete donor and even though embryos are needed for treatment and research. This is worth considering in the context of a hypothetical national donation system, because such a system

¹¹⁴ HFEA (n 44) para 5.11.

¹¹⁵ See eg the fraud trial that collapsed after 2 years, largely because of jurors' difficulties: D Leigh, 'Jury Protest Forces Fraud Trial Collapse After 2 Years', *The Guardian* (23 March 2005).

¹¹⁶ Titmuss (n 63).

¹¹⁷ See Ferraretti and others (n 108) esp 2483.

¹¹⁸ s 14(1)(c), (4) and (5), 1990 Act and Human Fertilisation and Embryology (Statutory Storage Period for Embryos and Gametes) Regulations 2009/1582, as amended by Regulations 2009/2581.

could operate to reduce the loss of these embryos by allocating additional points to those who agree to donate any resultant embryos that they do not use within a set period of time. It is even possible to link the points to the storage period, so that a couple wanting to, say, create an embryo using donor sperm could get points for agreeing that any unimplanted embryos are donated after ten years and additional points for agreeing to donation after only five years. Such a system would not lead to women implanting problematic numbers of embryos to ensure that none remained for storage because the HFEA already severely restricts the number that may be implanted at any one time.¹¹⁹

Would this, however, effectively coerce those seeking access to donor reproductive material into donating their own material or rushing subsequent decisions on whether to use the stored embryos themselves? This question carries two concerns. The first has been overstated, because the proposed system is not making donation compulsory, rather it is providing a slight incentive to those who agree to donation in advance. Those seeking access to donation cannot coherently object to donation in principle and, indeed, the principle of solidarity (and, in the case of blood, general positive duties) supports a *prima facie* obligation to donate. With regard to the second concern, it should be borne in mind that the law already takes the view that the option of using frozen embryos should not be kept open indefinitely, as shown by the existence of the statutory storage period. Nonetheless, any such system would need to be able to take account of genuine reasons (eg illness) for later extending the storage period.

V. CONCLUSION

This article has examined the potential role that a national donation system could play in the legal and ethical implementation of incentives to gamete donation. It argues that a national donation system could enable the implementation of an ethically defensible mirror exchange system, but a preferable way to incentivise gamete donation for both treatment and research would be through a system of indirect mirror exchange. Such a system would enable the allocation of gametes to track factors such as medical urgency, waiting time and (perhaps) avoidance of transmission genetic disease, while also rewarding donor contributions. An indirect mirror exchange system of this type could operate alongside or instead of an ethically implemented system of payment of donors.

¹¹⁹ See HFEA, Code of Practice, paras 7.3–7.5.